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(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

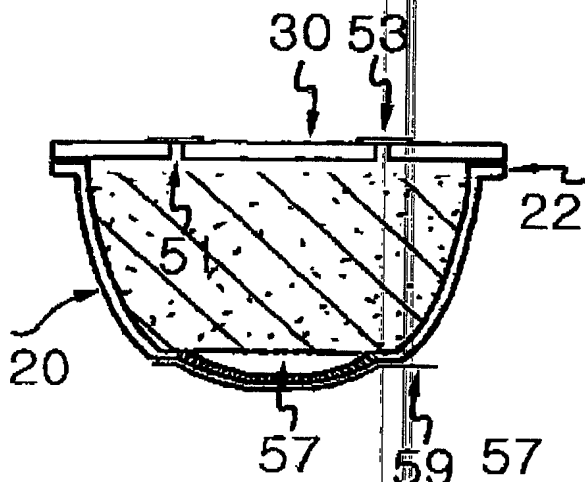
(19) World Intellectual Property Organization
International Bureau(43) International Publication Date
12 September 2003 (12.09.2003)

PCT

(10) International Publication Number
WO 03/073896 A1

- (51) International Patent Classification: A47J 31/00 [KR/KR]; 1-607 Jinju Apartment, 20-4 Shinchon-Dong, Songpa-Ku, Seoul 138-240 (KR).
- (21) International Application Number: PCT/KR03/00431
- (22) International Filing Date: 6 March 2003 (06.03.2003)
- (25) Filing Language: Korean
- (26) Publication Language: English
- (30) Priority Data:
10-2002-0012291 7 March 2002 (07.03.2002) KR
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- (81) Designated States (national): AE, AL, AM, AT, AU, AZ, BA, BG, BR, BY, BZ, CA, CH, CN, CU, CZ, DE, DK, DZ, EE, ES, FI, GB, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LK, LT, LU, LV, MN, MX, NO, NZ, PH, PL, PT, RO, RU, SE, SG, SK, TJ, TM, TR, UA, US, UZ, VN, YU, ZA.
- (84) Designated States (regional): European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR).
- Published:
— with international search report
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.
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(54) Title: A SEALED CONTAINER FOR LIQUID FOODS EXTRACTION



(57) Abstract: Disclosed is a sealed container for simply extracting water-soluble contents at a low price. The sealed container (10) has a body (20) and a cover (30). The body (20) and the cover (30) made of material having impermeability against oxygen and fluid. The body (20) and the cover (30) are securely adhered on a flange (22) extended horizontally outwardly from an upper end of the body (20). The body (20) has outlets (57) of a small diameter formed at the bottom thereof for preventing passing of contents therethrough and for discharging only extracted liquid therethrough so that the body (20) provides both filtering function of the contents and discharging function of the extracted liquid. A screen (59) is disposed on the outlets (57) for isolating the contents from the outside and is made of material having impermeability against oxygen and fluid, the screen allowing flow of the extracted liquid through the outlets (57) by detaching the screen (59) during use.

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A SEALED CONTAINER FOR LIQUID FOODS EXTRACTION**Technical Field**

5 The present invention relates to a sealed container of food which is solvable to water as well as extractible or reducible in the form of water vapor or hot water.

Background Art

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 There are lots of foods which are extractible and reducible in a mixture of water vapor and hot water. For example, there are foods, such as herbal medicines including coffee, tea, chocolate, herb, or edible stuffs
15 dehydrated or concentrated, milk, condensed milk, powdered milk, infant foods, and the like.

 Coffee of the above foods may be representative favorite food which many people enjoy in the world. In general, there are various approaches for extracting coffee.
20 One approach is widely used, in which roasted coffee beans are ground, poured into a conical filter, and filtered with hot water under atmospheric pressure.

 A certain inventor from Italy invented a method for extracting coffee deliciously which is called espresso.
25 This approach has obtained a good reputation. In Korea, espresso has attracted an explosive attention and been enjoyed by many people. That approach is a method in which

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coffee is extracted through instant resolution by water vapor under high pressure as well as hot water. Roasted coffee beans are ground into fine powder, and the powder of coffee bean is put into a closed pressure container and
5 extracted rapidly using high-pressure water vapor and hot water. This approach has a disadvantage in that unwanted residuals remain in the container, but wanted liquid coffee is extracted together with its strong fragrance.

However, the approach for extracting espresso coffee
10 requires an expensive and complicated machine and many processes, and thus, common users feel very uncomfortable. For this reason, other attempts have been made to simply extract coffee using a sealed container such as a cartridge.

As one of the attempts, U.S. Patent No. 2,968,560
15 discloses a cartridge which includes an internal filter forming two compartments and is designed to extract coffee using a system penetrating upper and lower surfaces of the internal filter before extraction. However, this cartridge has a disadvantage in that a thickness of the surfaces
20 requires utilizing the relative unsanitary system which prevents highly clean extraction procedure and completion of extraction.

Cartridges disclosed in U.S. Patent Nos. 4,136,202 and 5,948,455 are designed to be firstly ruptured under
25 unacceptable pressure. To open the cartridge in an exact reproductive manner, by which these inventions are characterized, used materials must be processed in a highly

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elaborate manner. Thus, the above cartridges have several disadvantages in that the cartridge price is increased and operation procedures of the cartridge are complicated.

U.S. Patent Application No. 2002/0015768A1 discloses
5 an improvement over the foregoing patents. This improvement is characterized by a lower portion formed of a foamed layer, and thus backflow of an extracted solution or residual is prevented. This improvement must be also provided with at least one outlet formed by forcibly boring
10 the lower portion.

First of all, the reason why the sealed container for extracting espresso coffee extracted under pressure has been widely used results from that users can conveniently use it due to simplicity of extracting processes, the
15 obtained coffee can maintain its uniform quality and sanitary extracting environment, coffee can be maintained in the optimum condition, and the container can provide excellent extracting conditions and taste. There are lots of sealed containers for extracting coffee, but in fact,
20 only sealed containers, which are opened under appropriate pressure by injected water and vapor or opened by physical force, can satisfy the above conditions.

Furthermore, the main reason, why a method and an apparatus for extracting espresso coffee have still been
25 operated by an expert and have not been universalized, results from that the coffee extractor is very expensive, and that the extracting method is complicated and

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uncomfortable.,

Disclosure of Invention

5 Accordingly, the present invention has been made in
view of the above problems, and an object of the present
invention is to provide a sealed container for allowing
anyone to extract various desired extractable substances
including espresso coffee in a simple and easy manner, and
10 for providing a cost-effective fabricating capability.
Furthermore, it is another object of the present invention
to provide an extractor for extracting the contents
contained in the sealed container, capable of being
fabricated in a very simple and cost-effective manner,
15 unlike an existing expensive dedicated extractor, capable
of packing coffee in a uniform volume, and reproducing
constant taste and fragrance when coffee is extracted under
the conditions of the same temperature, pressure and time.

 Additional advantages, objects, and features of the
20 invention will be set forth in part in the description
which follows and in part will become apparent to those
having ordinary skill in the art upon examination of the
following or may be learned from practice of the invention.

 To achieve these objects, according to a primary
25 aspect of the present invention, there is provided a sealed
container having a body and a cover, the body and the cover
being made of material having impermeability against oxygen

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and fluid, the material being selected from the group consisting of pure plastic, multilayer plastic, aluminum, stainless steel, iron sheet, aluminum/plastic composite, aluminum/plastic/paper composite, and pulp mold/plastic composite, wherein the body and the cover are securely adhered on a flange extended horizontally outwardly from an upper end of the body, the body has outlets of a small diameter formed at the bottom thereof for preventing passing of contents therethrough and for discharging only extracted liquid therethrough so that the body provides both a filtering function of the contents and a discharging function of the extracted liquid, and wherein a screen is disposed on the outlets for isolating the contents from the outside and is made of material having impermeability against oxygen and fluid, the screen allowing flow of the extracted liquid through the outlets by detaching the screen during use.

Brief Description of the Drawings

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Further objects and advantages of the invention can be more fully understood from the following detailed description taken in conjunction with the accompanying drawings in which:

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FIG. 1 is a view of sealed containers having an outlet according to the present invention, in which

FIG. 1a is a view showing a basic sealed container,

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FIG. 1b is a view of a sealed container of a reverse conical frustum, which is a modification of FIG. 1a,

FIG. 1c is a view of a sealed container in the form of a hemisphere, and

5 FIG. 1d is an exploded view of the outlet formed at the bottom a filter and an outlet stopper; and

FIG. 2 is a view of sealed containers, each of which has a cover provided with outlets, in which

10 FIG. 2a is a view of a cylindrical sealed-container having an inlet for inserting an orifice thereto and outlets formed in the cover,

FIG. 2b is a view of a sealed container having a reverse conical frustum body provided with outlets formed in the cover,

15 FIG. 2c is a view showing a state in which the cover has a screen for stopping the outlets formed in the cover and a hole for checking position,

20 FIG. 2d is an enlarged view of an attached portion between the body and the cover, showing a bonded portion, where a filter and the outlets are bonded, and a screen,

FIG. 2e is a view of the hemispheric body, and

FIG. 2f is a view of the hemispheric cover downwardly protruding from the reverse conical frustum.

25 Best Mode for Carrying Out the Invention

The present invention will now be described in detail in connection with preferred embodiments with reference to

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the accompanying drawings. For reference, like reference characters designate corresponding parts throughout several views.

FIG. 1a shows a sealed container 10 of a standard type according to the present invention.

A cover 30 has an inlet 51 for inserting an orifice thereto to inject hot water and vapor. The outside of the inlet 51 is stopped by a strong screen 53 (a film or a sheet). The screen 53 is first and forcibly ruptured by inserting the orifice (water injector). A valve 55 is adhered on the inside of the inlet 51. A number of outlets 57 are formed in the opposite side of the side, where the inlet 51 is formed, to discharge extracted liquid. A filter 71 is attached on the inside of the side, where the inlet 51 is formed. The outlets 57 are sealed by a screen 59 strongly bonded to the body 10 via an adhesive 73. The screen 59 has an ear 75 so that it can be readily detached when it is used, and the ear 75 has a hole 77. The adhesive 73 is removed in a state that the adhesive 73 is adhered on the screen 59 when the screen 59 is removed. The cover 30 includes a position check hole 23 for allowing a user to exactly check the inlet 51 and the position of the ear and to insert the orifice thereto. The sealed container 10 can contain roasted coffee or the like and sealed with a body 20 and the cover. 30.

The sealed container shown in FIG. 1b has the same structure and function, excepting the container is in the

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form of a reverse conical frustum that a diameter R3 of the bottom is smaller than a diameter R2 of the body 20. The sealed container of FIG. 1b has the same functions as that of FIG. 1a, with the exception that it is the reverse
5 conical frustum to gather and discharge extracted liquid. The sealed container has a number of outlets 57 of small diameter formed in the outlet side to allow discharge of the extracted liquid, and a filter 71 mounted inside the outlet side.

10 FIG. 1 c shows a hemispherical container. The container of FIG. 1c has the same structure and function as FIG. 1a with the exception of the hemispheric form. FIG. 1d is an enlarged view showing a bonded portion between the body 20 and the cover 30.

15 FIG. 2 shows sealed containers 10 of various shapes, in which the outlets 57 are formed in the cover 30.

The sealed containers 10 of various shapes shown in FIGS. 2a, 2b, 2e and 2f have function and structure similar with that of FIG. 1a, excepting that the cover 30 has the
20 outlets 57.

The cover 30 of FIG. 2a has a number of the outlets 57 of small diameter to discharge extracted liquid, and the filter 71 attached on the inside of the cover 30. The screen 59 seals the outlets 57. FIG. 2c is a top view of
25 the screen 59 mounted on the outlets 57. In FIG. 2c, the outlets 57 are shown as it is covered with the screen 59. The outlet 59 is provided with the ear 75 and hole 77 for

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removing the screen 59. The hole 23 is located in the opposite side of the side, where the ear 75 is disposed, for allowing the user to check the position of the ear 75.

FIG. 2d is an enlarged view showing surroundings of the outlets.

FIG. 2f shows the hemispherical cover 30.

The sealed container 10 contains roasted coffee ground, water-soluble foods, or the likes and is sealed. The sealed containers 10 of various shapes shown in FIG. 2 can be used according to the use purpose suitable for the shape of the container. The sealed containers of FIG. 2 can be made of the same material as that of FIG. 1.

A structure and an operation of the present invention will be described in more detail.

The sealed container 10 (which may be in the form of a cup) includes the body 20 for surrounding contents, and the cover 30 for isolating the contents surrounded by the body 20 from the outside. The body 20 and the cover 30 are securely adhered on a flange 22 extended horizontally outwardly from an upper end of the body 20.

The object contents are packed in the sealed container 10. The packed contents are solved and extracted into water vapor or water injected through the orifice, and then discharged to the outside.

The sealed container 10 is made of a flexible material having impermeability against oxygen and fluid, so that the contents can be stored without change in quality in an

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airtight condition for a predetermined period of time.

One of the body 20 and the cover 30 has the inlet 51 for inserting the orifice thereto, and the outlets 57 for discharging extracted liquid are formed in the opposite side of the inlet 51. The inlet 51 has the strong screen 53 of the film or sheet type. The screen 53 is ruptured by inserting the orifice thereinto, which can feed water vapor or water during extraction of the contents, so that water vapor and hot water of a high pressure can be blown into the container.

The screen 53 attached on the inlet 51 is selectively made of a film or sheet having low air-permeability. Examples of the film or sheet having low air permeability can include polyethylene, EVOH (ethylenevinylalcohol), PVDC (polyvinylidene chloride) and aluminum films or sheets, or a multilayer film thereof. The sealed container 10 and the screen 53 can be more securely bonded to the body 20 by using a solvent adhesive or a hot melt adhesive onto the surface of the screen 53. Additional description about the adhesives will be omitted, as useful and excellent adhesives have been widely known and used in the art.

A number of the outlets 57 of the small diameter are formed in the opposite side of the portion where the inlet 51 is formed. The outlets 57 have the small diameter so that only extracted liquid can be discharged through the outlets 57 without discharge of solids during or after extraction. The diameter of the outlets 57 is about 0.1 ~

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2.0m/m, and preferably about 0.2 ~ 1.0m/m. The outlets 57 are securely bonded and sealed with the screen 59, but it is designed in such a manner to discharge the extracted liquid downwardly from the outlets 57 when the screen 59 is removed during extraction of the contents and the high temperature and a predetermined pressure are transferred to the inside through the orifice. The screen 59 serves to prevent contact of the contents with the outside and inflow of oxygen and fluid in the same way as the screen 53 formed on the inlet 51. The screen 59 is made of polyethylene, EVOH (ethylenevinylalcohol), PVDC (polyvinylidene chloride) and aluminum films or sheets, or a multilayer film thereof.

The cover 30 is strongly attached to the flange 22 of the body 20 to support the entire structure of the container in a three-dimensional fashion as well as to maintain the inner space in an airtight condition, so that the entire structure of the container can endure vapor of a high pressure injected from the outside during extraction of the contents.

The sealed container 10 according to the present invention is so designed that the contents are extracted under predetermined pressure, and includes the body 20 and the cover 30 to pack beverage substance to be extracted. The sealed container is formed as a sealed column, a reverse conical frustum or a hemisphere, which has a base R3 with the diameter being equal to or smaller than the diameter R2 of the body 20.

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The sealed container 10 can endure a pressure of up to about 20 atm, and is selectively made of a material having low air permeability and a softening point of at least 100°C. The outlets 57 can be opened by physical removal or
5 forcible rupture by the external force at a starting point of extraction.

The sealed container 10 is opened only under a predetermined condition, and extracts the contents. The screen 53 mounted on the inlet 51 is first ruptured by
10 inserting the orifice (injector), in which the contents are solved and extracted in a mixture of water and vapor under the influence of hot water and vapor pressure for extraction. A foamed valve 55 can be mounted on the inside of the inlet 51 or the front end of the outlets 57 so that
15 particles of the contents are not discharged to the outside during or after the extraction. The foamed body serves as the valve 55, so as to discharge the extracted liquid and to prevent passing of the particles of the contents.

The screen 59 is secured bonded and sealed to the
20 outlets 57 with the adhesive 73. The screen 59 mounted on the outlets 57 is made of material of low oxygen-permeability to protect the contents for a predetermined period of time. It is preferable that the adhesive 73 is a hot melt adhesive of solvent type or insolvent type, which
25 does not have any influence on foods. The screen 59 has the suspended ear 75 with the hole 77, which can be readily detached with a hand or a machine. The screen 59 may be L-

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shaped at an attached portion for easy detachment with the hand or the machine. In case of mechanical detachment, any tool capable of hooking the hole 77 of the ear 75 is inserted into the hole 77 of the ear 75. The adhesive 73 is removed together with the screen 59 when the screen 59 is removed. The cover 30 has the hole 23 for allowing the user to easily see the position of the ear 75 and the position of the inlet 51 for inserting the orifice.

After the screen 59 is removed physically, the extracted liquid solved inside the sealed container 10 is discharged to the outside through the outlets 57 of the bottom of the container 10. After the extraction, the sealed container 10 can be easily removed from the extractor while maintaining the packing shape leaving a minimum quantity of coffee grounds (extraction residual).

Besides the method for physically detaching and removing the screen 59 of the outlets 57 including the filter 71 from the sealed container 10 and the method for rupturing the screen 59 under vapor pressure transferred through the orifice, there is a method for forcibly penetrating or rupturing the screen 59. It is that a number of small pins or needles placed on the outlet side of the sealed container 10 penetrate the screen 59 before the extraction to secure the outlets 57 for the extracted liquid.

The sealed container 10 can endure a pressure of up to 15 ~ 19 atm during the extraction.

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The sealed container 10 can pack itself with food which is soluble to water as well as extractible and reducible with water vapor or hot water. Although examples of the former food preferably includes grounded roast
5 coffee, they also include soluble coffee, coffee concoction, tea, chocolate, herbal medicine, other dewatered or condensed food, powder of roast grain, substitute food, milk, condensed milk, dry milk, infant foods and so on.

The sealed container 10 according to the present
10 invention is particularly suitable for extracting espresso coffee. Factors for preparing delicious coffee include newly ground fresh coffee of fine blending, clean water of a proper temperature and appropriate extraction pressure and time.

15 Coffee beans after harvest are apt to lose original flavor while passing through various treatments before consumed by people. Untreated coffee beans can maintain their original flavors for several years with the slightest decrease in taste. However, ground coffee powder tend to
20 lose its flavor more rapidly than roasted coffee beans. After exposure to the air, the roasted coffee beans begin losing their flavors in about a week, ground coffee powder begins losing its flavor in an hour, and boiled coffee begins losing its flavor in minutes. From old days,
25 Arabians have performed all treatments such as roasting, grinding and extraction to coffee within 30 minutes to solve the above problems. According to one of the easiest

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and most effective ways introduced up to the present, fresh roasted coffee beans are ground to extract coffee on the spot.

Therefore, in order to keep ground coffee without
5 change for a long time, it is necessary to tightly seal ground coffee powder from oxygen, moisture and the like. A container of ground coffee is made of a material having impermeability against oxygen and fluid. Otherwise, nitrogen gas may be mixed into the container to previously
10 prevent permeation of other gas and moisture.

As well known, coffee powder of a particle size of about 1mm is appropriate to extract espresso coffee. In case of ground coffee, about 5 to 10grams of coffee powder is required to extract one cup of coffee. Less condensed
15 ground coffee has an apparent specific gravity of about 0.4 to 0.6gram/cc. Therefore, the sealed container 10 needs an internal volume of about 5 to 20cc to extract one or two cups of coffee.

The important parts of the sealed container 10, that
20 is, the body 20 and the cover 30, are made of plastic material, for example, resin, which has a softening point of at least 100°C, of pure plastic materials, such as low-density polyethylene resin, high-density polyethylene resin, polypropylene resin, polystyrene resin, ABS resin,
25 polycarbonate resin, polyacetal resin, polyacryl resin, polyester resin and so on. Alternatively, the body 20 and the cover 30 may be made of one selected from the group

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consisting of aluminum sheet, cast aluminum, stainless thin foil, iron sheet or multilayer plastic, cardboard/aluminum/plastic, multilayer sheet such as plastic/metal sheet or cardboard/plastic, or nonwoven
5 fabric layer such as pulp mold.

The body 20 has a thickness of about $60\mu\text{m} \sim 2,000\mu\text{m}$, and preferably about $60\mu\text{m} \sim 1,000\mu\text{m}$, and the cover 30 has a thickness of about $100\mu\text{m} \sim 2,000\mu\text{m}$, and preferably about $100\mu\text{m} \sim 1,000\mu\text{m}$.

10 It is unnecessary that the body 20 of the sealed container 10 must be in the form of a plane, and may be shaped as a column, a hemisphere, or a reverse conical frustum.

The foamed or woven type valve 55 is mounted on the
15 inlet side for inserting the orifice, so that it serves as a cutoff valve 55. The valve 55 can prevent backflow of the extracted liquid. Furthermore, when the orifice inserted into the inlet 51 is pulled out after the user, the foamed or woven type valve 55 having elasticity closes the inlet
20 51 to prevent leak out the contents.

A number of the outlets 57 of the small diameter are formed on the opposite side of the inlet side so that extracted liquid can be easily discharged. The outlets 57 has the small diameter to prevent ground coffee powder from
25 being discharged to the outside during the extraction. The maximum diameter of the outlets 57 is about 2m/m , and preferably 0.7m/m , and more preferably 0.5m/m . Additionally,

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it would be appreciated that the diameter of the outlets 57 may be less than 0.1m/m if the extracted liquid can be discharged.

To prevent the contents from being dispersed on a
5 movable layer and discharged together with the extracted liquid during the extraction, if necessary, woven or nonwoven fiber for providing a filtering function can be provided. The woven or nonwoven fiber can refer to a filter 71, and the filter layer is bonded or fused on the outlet
10 side. The density of the filter 71 is about 10 ~ 150gms/m³, and preferably 20 ~ 60gms/m³. The filter 71 is placed on the outlet side so as to prevent dispersion and discharge of insoluble particles or coffee grounds, and to guarantee uniform extraction.

15 Furthermore, the filter 71 can reduce a discharge amount of unnecessary substances by absorbing coffee oil remaining inside coffee as well as provide the filtering function.

The size of the sealed container 10 of the present
20 invention can be changed according to the volume of the contents to be prepared. It is preferable that the contents can be contained in the container up to 5 ~ 200cc. It is preferable that the diameter of the sealed container 10 is about 20 ~ 50m/m, and the length of the container is about
25 10 ~ 100m/m.

The sealed container 10 is opened by detaching the screen 59 mounted on the outlet side of the container.

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Compared with the conventional manual extractors and cartridge type extracting methods, the sealed container 10 according to the present invention is still easier in design of the extractor, in manufacture of the sealed container 10, and in use the container. Moreover, the sealed container 10 of the present invention can always provide the same taste, and is effective and economical.

Industrial Applicability

10

As described above, the sealed container according to the present invention has several advantages.

Firstly, the sealed container enables simple and easy extraction of its contents. In extraction of water-soluble beverage or espresso coffee from the functional sealed container with the extractor of the invention, any one can operate an operation button of a predetermined condition to immediately prepare excellent espresso coffee or beverage. Introduction of the easy extraction process and the inexpensive extractor has an advantage which can attribute to popularization of espresso coffee in particular.

Secondly, the sealed container has excellent reproducibility of taste in that it can always provide same taste even though extraction is performed by any person at any time and place. This advantage can be readily obtained by packing the contents in the same quality and quantity and extracting the contents with the same extractor under

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identical conditions.

Thirdly, the sealed container enables very simple maintenance and management of its contents. The contents are individually packed in sealed containers each of a
5 volume for extracting one or two cups of beverage so that they do not contact with moisture or oxygen in the air. In this manner, the contents can be readily managed without change in quality owing to long-term storage.

Fourthly, the sealed container is more economical in
10 use. Simple functions are desired to the extractor of the invention using this sealed container so that the extractor can be manufacture and supplied at a cost which is remarkably inexpensive compared to the conventional espresso coffee extractor. As a result, the extractor of
15 the invention can gain popularity and spread its application.

Fifthly, the contents contained in the sealed container needs not directly touched or opened at every extraction so that the sealed container and the extractor
20 of the invention have substantially no regions to be cleaned before or after use. The sealed container and the extractor of the invention are more hygienic.

As set forth above, the sealed container of the present invention has the simple structure so that any one
25 can easily extract water-soluble foods of various kinds including espresso coffee, and is economical. Moreover, the sealed container and the extractor for extracting the

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contents has the simple structure and can be manufactured at an inexpensive cost, differently from the conventional expensive machines of several million won. The sealed container and the extractor can provide the same taste and
5 fragrance at any time and place when the contents are extracted at the same temperature and pressure and for the same time period after packing coffee at a predetermined amount measured uniformly.

The extractor of the sealed container of the present
10 invention can be used in houses, offices, shops, vending machines and so on.

While the present invention has been described with reference to the particular illustrative embodiments, it is not to be restricted by the embodiments but only by the
15 appended claims. It is to be appreciated that those skilled in the art can change or modify the embodiments without departing from the scope and spirit of the present invention.

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What Is Claimed Is:

1. A sealed container(10) having a body(20) and a cover(30), the body(10) and the cover(30) being made of material having impermeability against oxygen and fluid, the material being selected from the group consisting of pure plastic, multilayer plastic, aluminum, stainless steel, iron sheet, aluminum/plastic composite, aluminum/plastic/paper composite, and pulp mold/plastic composite,

wherein the body(20) and the cover(30) are securely adhered on a flange(22) extended horizontally outwardly from an upper end of the body(20), the body(20) has outlets(57) of a small diameter formed at the bottom thereof for preventing passing of contents therethrough and for discharging only extracted liquid therethrough so that the body(20) provides both a filtering function of the contents and a discharging function of the extracted liquid, and

wherein a screen(59) is disposed on the outlets(57) for isolating the contents from the outside and is made of material having impermeability against oxygen and fluid, the screen(59) allowing flow of the extracted liquid through the outlets(57) by detaching the screen(59) during use,.

2. The sealed container according to claim 1, wherein

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the screen(59) has an ear(75) formed on a side thereof.

3. The sealed container according to claim 2, wherein the ear(75) has a hole(77) for allowing a user to check the position of the ear(75).

4. The sealed container according to claim 2, wherein the ear(75) is in the form of an 'L'-shape, which is bent from the screen(59).

10

5. The sealed container according to claim 1, wherein the body(20) or the cover(30) includes an inlet(51) for inserting an orifice thereto and a hole(23) for allowing a user to exactly check the direction, the inlet(51) has a screen(53) for stopping a passage.

15

6. The sealed container according to claim 1, wherein the sealed container(10) has a diameter of about 10 ~ 100mm and a height of about 10 ~ 100mm.

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7. The sealed container according to claim 1, wherein a filter(71), which is made of woven or nonwoven fabric and provides a filtering function, is mounted on the outlet side.

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8. The sealed container according to claim 1, wherein the sealed container(10) is made of plastic material having

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a softening point of about 100°C ~ 150°C.

9. The sealed container according to claim 1, wherein the sealed container(10) is made of biodegradable polymer
5 matrix material.

10. The sealed container according to claim 1, wherein the rate of the diameter(R2) to the length of the sealed container(10) is 0.5(1/2) ~ 4.

10

11. The sealed container according to claim 1, wherein the body(20) is filled with nitrogen gas together with the contents, whereby the contents prevents moisture from adsorbing with oxygen.

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12. The sealed container according to claim 1, wherein the inner volume of the sealed container(10) is about 5cc ~ 200cc.

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13. The sealed container according to claim 1, wherein the sealed container(10) is designed to endure a pressure of up to about 2 ~ 20 atm.

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14. The sealed container according to claim 1, wherein the diameter(R1) of the ear(22) is larger than the diameter(R2) of the cover(30), and equal to the diameter(R1) of the body(20).

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15. The sealed container according to claim 1, wherein the body(20) is selectively formed as a sealed column, a hemisphere or a reverse conical frustum with the diameter(R3) of the bottom thereof being equal to or smaller than the diameter(R2) of the top thereof.

16. The sealed container according to claim 1, wherein the body(20) is made of one selected from aluminum sheet of 100 μ m ~ 2,000 μ m, plastic(PP(polypropylene), PE(polyethylene) or PA(polyamide)) of 100 μ m ~ 2,000 μ m, PET(polyethylene terephthalate) or multilayer plastic of 30 μ m ~ 2,000 μ m, cardboard/aluminum/plastic composite and cardboard/plastic composite.

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17. The sealed container according to claim 1, wherein the cover(30) is made of one selected from aluminum sheet of 60 μ m ~ 2,000 μ m, paper more than 60gms/m², plastic of 60 μ m ~ 2,000 μ m and aluminum of 20 μ m ~ 2,000 μ m, EVOH(ethylenevinylalcohol) or PVDC(polyvinylidene chloride) of 30 μ m ~ 2,000 μ m and plastic (PP, PE or PA) of 100 μ m ~ 2,000 μ m, PET of 30 μ m ~ 2,000 μ m and plastic(PP or PE) of 100 μ m ~ 2,000 μ m, and laminate made of metalized PET or PET having an upper cutoff layer such as SiO₂.

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18. A sealed container for extracting liquid foods, wherein the sealed container is adapted to pack at least one selected from the group consisting of ground roast

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coffee, coffee concoction, tea, chocolate, herb, herbal
medicine, dewatered or condensed edible foods, processed
grains, grain-mixed beverage, powder of roast grain,
substitute food, milk, condensed milk, dry milk, infant
5 foods and so on.

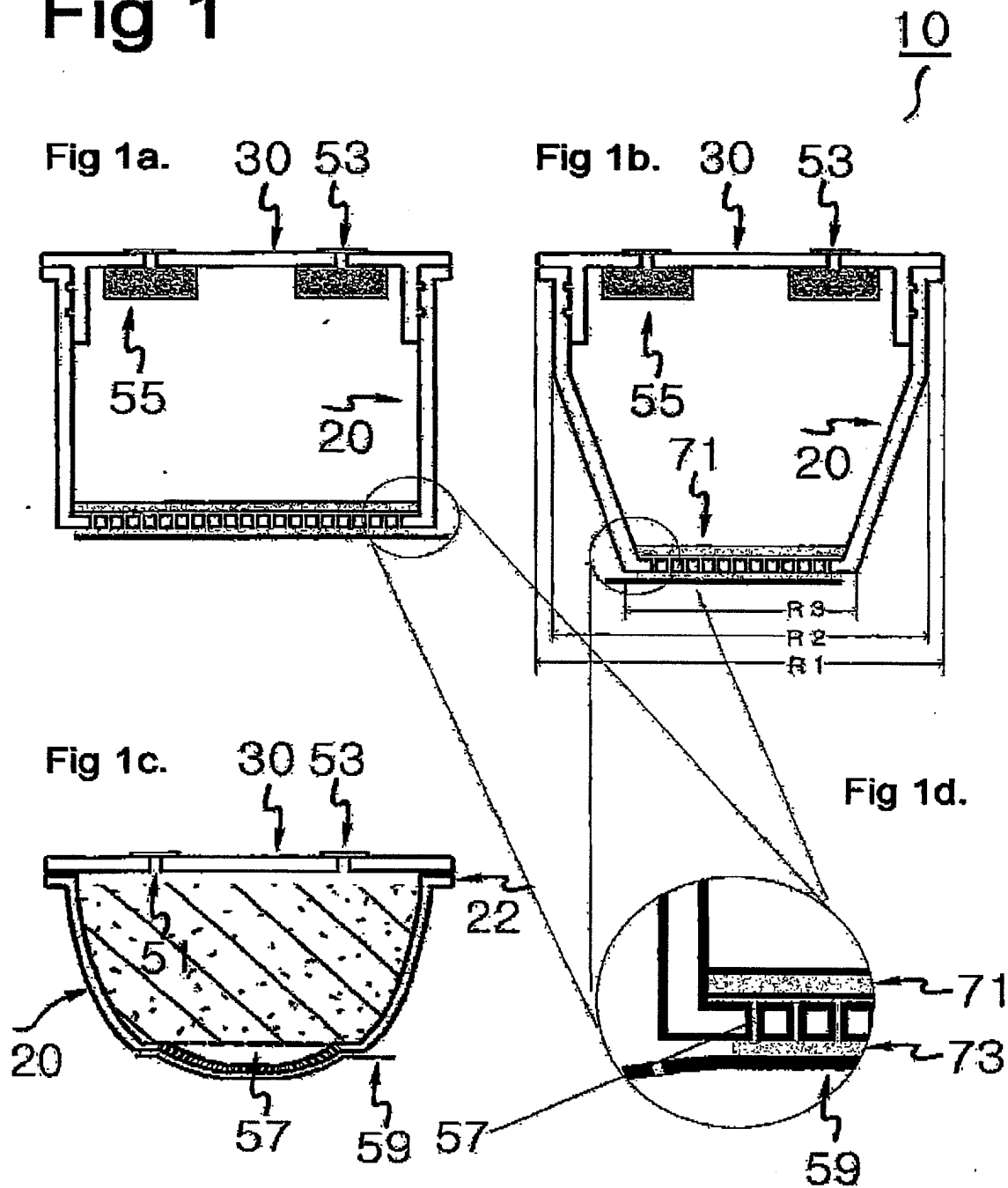
19. The sealed container according to claim 1,
wherein the diameter of the outlets 57 is about 0.1m/m ~
2.0m/m.

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Fig 1



INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR03/00431

A. CLASSIFICATION OF SUBJECT MATTER

IPC7 A47J 31/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A47J 31/02, 31/06, 31/10, 31/20, 31/44; 31/54, B65B 29/02, B65D 29/02, 35/52, 41/32, 51/28, 81/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean Patents and applications for inventions since 1975, Korean Utility models and applications for Utility models since 1975
and Japanese Utility models and applications for Utility models since 1975Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
e-KIPASS**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4,520,716 (Susan M. Hayes) Jun. 4, 1985 see the entire document	1,4,15
A	US 5,948,455 A (Jacques Schaeffer et al.) Sep. 7, 1999 see the entire document	1
A	US 4,136,202 (Eric Favre) Jan. 23, 1979 see the entire document	1
A	US 5,913,964 (Melton W. Bruce) Jun. 22, 1999 see the entire document	1,15
A	WO 93/17932 (Cordone Carlo) Sep. 16, 1993 see the entire document	1
A	US 4,757,911 (Mark E. Larkin et al.) Jul. 19, 1988 see the entire document	1
A	KR 20-0194691 (Sung-Gon, Ha) Jun. 23, 2000 see the entire document	1,2


☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents:
 "A" document defining the general state of the art which is not considered to be of particular relevance
 "E" earlier application or patent but published on or after the international filing date
 "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)
 "O" document referring to an oral disclosure, use, exhibition or other means
 "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
 "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
 "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
 "&" document member of the same patent family

Date of the actual completion of the international search
24 JUNE 2003 (24.06.2003)Date of mailing of the international search report
25 JUNE 2003 (25.06.2003)

Name and mailing address of the ISA/KR



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